

Statistics  
Measures of Center and Spread Test REVIEW

Name: KEY  
Date: \_\_\_\_\_

1. What are the two measures of **center** for a data set?

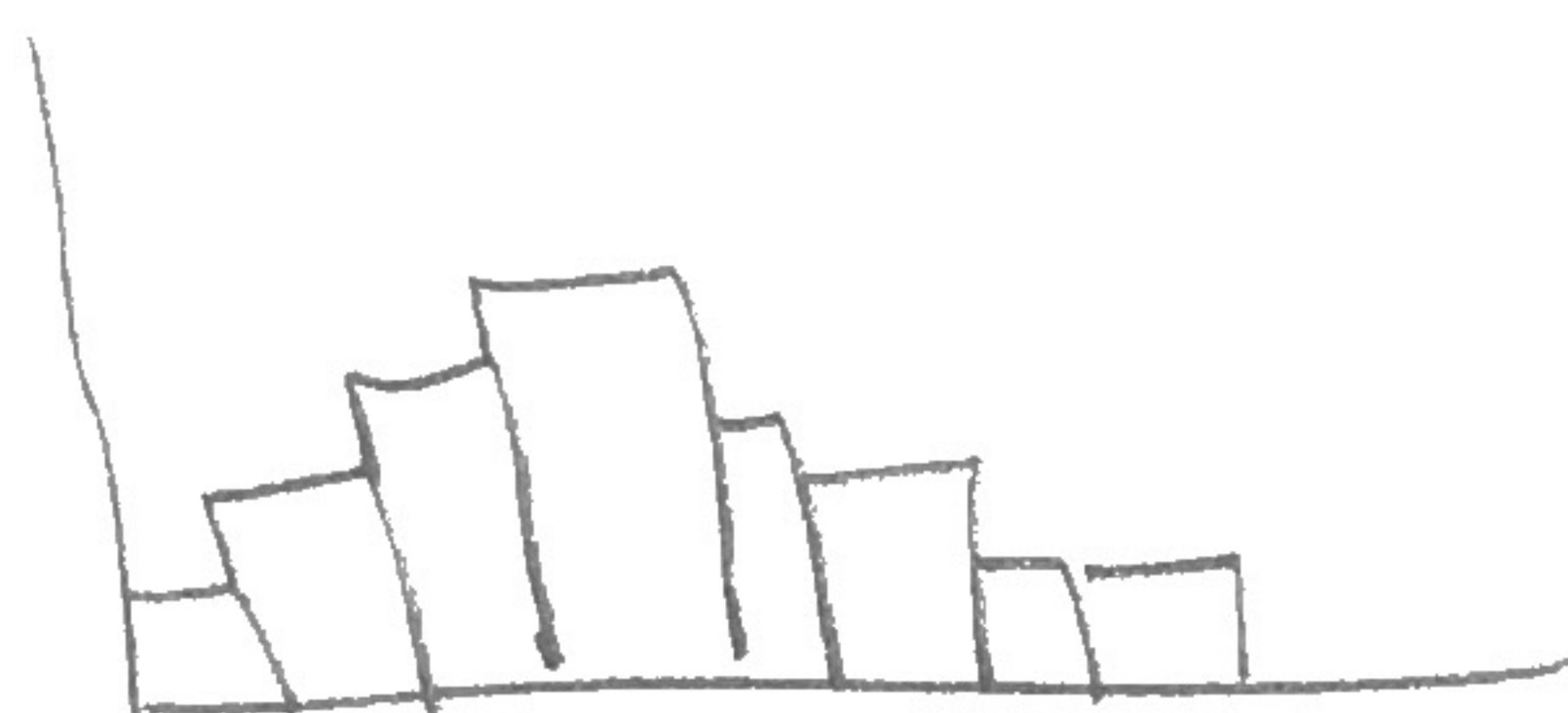
mean and median

2. When should you use each measure?

You should use mean when data is reasonably symmetric.

You should use median when there are outliers or lots of skewness.

3. Draw a picture of a histogram or boxplot, or make up a set of numbers that would be **best represented** by the **mean**.



4. Draw a picture of a histogram or boxplot, or make up a set of numbers that would be **best represented** by the **median**.



5. Tell **in your own words** what the **mean** is.

The mean is the average.

6. Tell **in your own words** what the **median** is.

The median is the middle number.



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7. What are the two measures of **spread** for a data set?

Standard deviation & IQR

8. When should you use each measure?

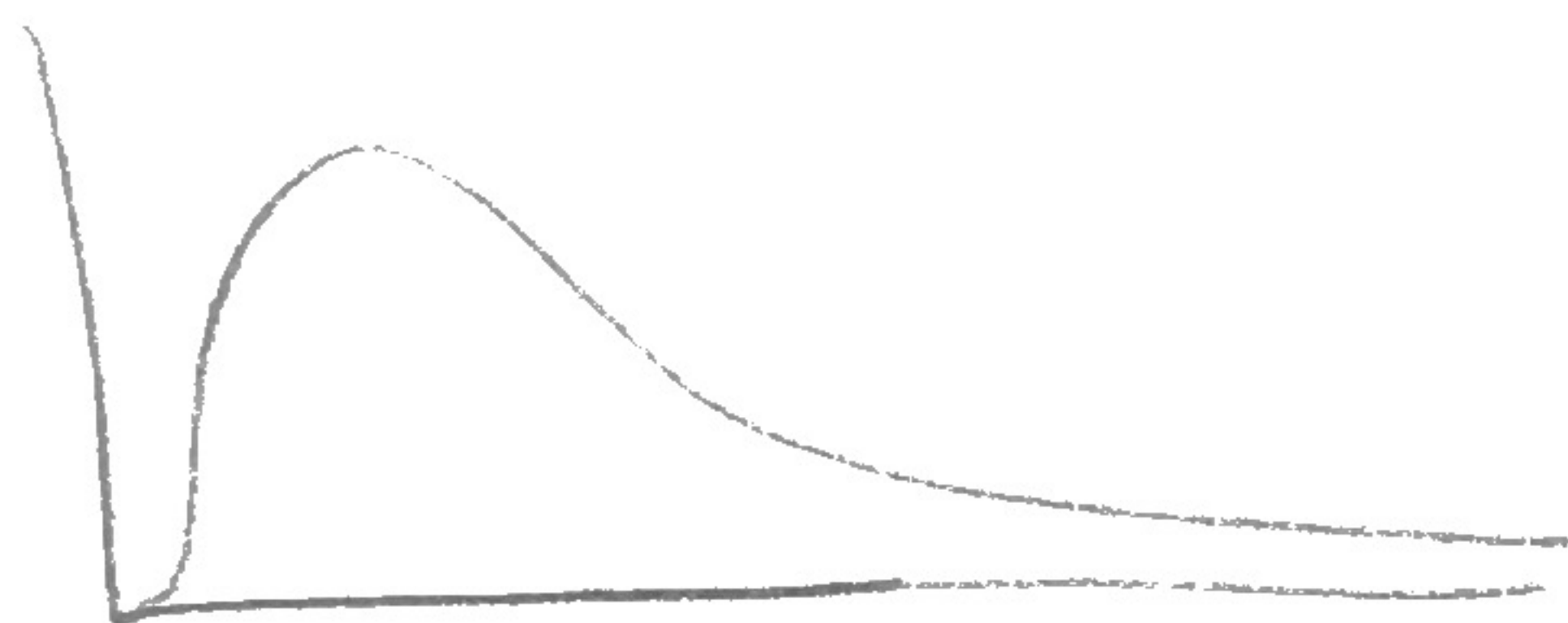
You should use standard dev. when there are no outliers

You should use IQR when there are outliers

9. Draw a picture of a histogram or boxplot, or make up a set of numbers that would be **best represented** by the **standard deviation**.



10. Draw a picture of a histogram or boxplot, or make up a set of numbers that would be **best represented** by the **IQR**.



11. Tell **in your own words** what the **standard deviation** is.

Average distance from the mean

12. Tell **in your own words** what the **IQR** is.

the length of the middle half of the data

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13. Find the **mean** and **standard deviation** of each data set below:

- a. 2, 3, 3, 4, 5, 6, 7, 8, 8, 9

$$\bar{x} = 5.5$$

$$s_x = 2.46$$

- b. 52, 53, 53, 54, 55, 56, 57, 58, 58, 59

$$\bar{x} = 55.5$$

$$s_x = 2.46$$

- c. These two data sets have **different means** but the **same standard deviation**. How can that happen?

Each data value is the same distance from the mean as in the other set.

14. Find the **mean** and **standard deviation** of each data set below:

- a. 60, 72, 76, 83, 94

$$\bar{x} = 77$$

$$s_x = 12.65$$

- b. 75, 76, 77, 78, 79

$$\bar{x} = 77$$

$$s_x = 1.58$$

- c. These two data sets have the **same mean** but **different standard deviations**. How can that happen?

The first data set is more spread out than the second.



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15. What is the only kind of number that **standard deviation** cannot be? Why?

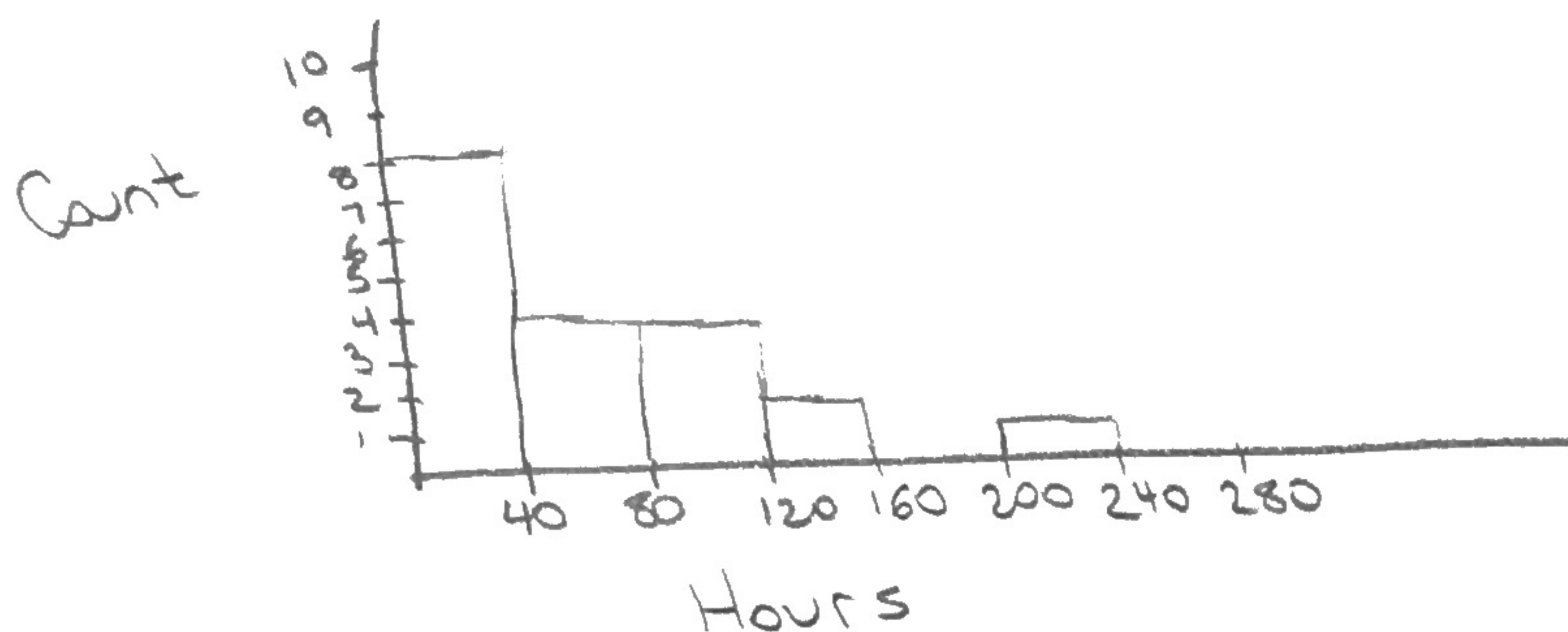
negative - you can't be a negative distance from the mean.

16. The values below are the community service hours for Delta Statistics for the first semester.

0	4	4	10	15	17	30	36	54	58
67	71	85	100	102	103	125	125	219	

a. Make a **histogram** or **boxplot** of these data.

CS Hours



b. Find the **mean** and **standard deviation** of the data.

$$\bar{x} = 64.47$$

$$s_x = 56.33$$

c. Find the **median** and **IQR** of the data.

$$\text{Med} = 58$$

$$\text{IQR} = 102 - 58 = 44$$

d. Which **measure of center** (**mean** or **median**) should we use to describe these data? Explain why you chose that measure.

The data is strongly skewed, so I would use the median & IQR to describe it.